CLAIMS

1. A thermoelectric generator comprising a plurality of thin-film n-type and p-type semiconductor elements (12, 14) that are placed alternately on a dielectric substrate (10) made of a ceramic and are connected in pairs at their ends to form a plurality of thermocouples (16), characterized in that said elements (12, 14) are polycrystalline semiconductor ceramics and in that the dielectric substrate (10) is thermally insulating and made of a microporous ceramic.

2. The generator as claimed in claim 1, characterized in that the substrate (10) has a thermal conductivity of less than 0.5 W/mK.

3. The generator as claimed in either of the preceding claims, characterized in that the semiconductor ceramics have thicknesses of less than 2 mm and, for example, between 0.04 and 1 or 2 mm, approximately.

4. The generator as claimed in one of claims 1 to 3, characterized in that the semiconductor ceramics are sintered on the substrate (10).

5. The generator as claimed in one of the preceding claims, characterized in that the semiconductor elements (12, 14) deposited on the substrate (10) are connected in series and/or in parallel.

6. The generator as claimed in one of the preceding claims, characterized in that it comprises a plurality of superposed substrates (10) carrying semiconductor elements (12, 14), the semiconductor elements of one substrate (10) being connected together in series and being connected in series or in parallel the semiconductor elements (12, 14) of another substrate (10).

7. The generator as claimed in one of the preceding claims, characterized in that the substrates (10) are in the form of strips, cylinders, washers or half-washers.

8. A process for manufacturing a semiconductor thermoelectric generator of the type described in one of the preceding claims, characterized in that it consists in depositing thin films of polycrystalline semiconductor ceramics (12, 14) on a dielectric substrate (10) made of a microporous ceramic and then in sintering the semiconductor ceramics (12, 14) by raising the temperature, in order to fix them to the substrate (10).

9. The process as claimed in claim 8, characterized in that it consists in forming the thin films by deposition on the substrate (10) by screen printing from a suspension of semiconductor ceramic powder in a liquid.

10. The process as claimed in claim 8 or 9, characterized in that the sintering is carried out by passing the dielectric substrate (10) into a furnace.

11. The process as claimed in claim 8, characterized in that it consists in depositing semiconductor ceramic powders on the dielectric substrate, in using a controlled scanning laser beam (42), so as simultaneously to fix a feature made of semiconductor ceramics to the substrate (10) and to sinter the semiconductor ceramics of this feature, and then to remove the excess semiconductor ceramic powders from the substrate (10).

12. The process as claimed in claim 8, characterized in that the dielectric substrate is a textile web (30) impregnated with a dielectric ceramic suspension (34),

on which web polycrystalline semiconductor ceramic features (12, 14) are deposited by screen printing, after which the web (30) is wound up on itself and the wound web (38) is placed in a furnace in order to sinter the ceramics and burn off the textile web (30) so as to give the ceramic substrate a porous structure.

13. The process as claimed in claim 12, characterized in that, after the web has been wound up and before the wound web (38) is passed into a furnace, connections are formed, on an end face of the wound web, between the ends of the semiconductor ceramic features (12, 14), these connections being made by depositing conducting materials such as conducting inks or pastes, or by metal brazes.

14. The process as claimed in claim 8, characterized in that it consists in forming the thin semiconductor ceramic films (12, 14) on the dielectric substrate (10) by means used for the fabrication of electronic circuits, such as vapor deposition, for example.